Report to

WA State Office of Financial Management

Grants, Contracts and Loans Feasibility Study

Alternatives Analysis and Recommendation

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Date: March 15, 2006

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1. INTRODUCTION

1.1. Purpose

The purpose of the Grants, Contracts and Loans Management (GCLM) Alternatives and Solutions document is to describe in detail the solution options considered and the evaluation of those options considering costs, benefits and risks.

Because this document follows the accelerated business case document, much of the work of describing the alternatives, evaluating their attributes and recommending a solution was begun in that document and refined in this one.

1.2. Background

The Washington State Department of Ecology must replace its aged Contracts & Grants Management System that processed transactions totaling $392 million in the 2003-2005 biennium. OFM has proposed that Ecology's replacement be directed into an enterprise system for Washington State to be used by multiple agencies for grants, contracts, and loans management. Benefits are avoidance of duplicative systems costs among agencies, cross-agency monitoring of projects, and improvement of core business practices. OFM is leading the effort, joined by the Departments of Ecology (ECY) and Community, Trade and Economic Development (CTED) as the first customers of the new system. An enterprise system is also mission-critical to CTED; it distributes over $1.2 billion in new and existing contracts and loans through manual procedures and spreadsheets and seeks improved business practices and information systems.

Monies spent toward such systems provide a unique opportunity to address not only ECY's and CTED's needs but also achieve:

- Avoidance of duplicative system' costs among agencies.
- Improved monitoring of projects. Agencies with programs for environmental quality could share project information, as recommended in the 2001 report by the Joint Legislative Audit and Review Committee, "Investing in the Environment: Environmental Quality Grant & Loan Programs Performance Audit."
- Improved management of many types of contracts and of loans.
- Automated fiscal processes to achieve efficiencies in the payment, receipt and accounting for funds.
- Electronic access to those applying for grants, requesting payments, or seeking information.

The Proposed System will be a *Roadmap* Business Initiative. The *Roadmap* is a multi-year effort to improve and integrate the state's financial and administrative processes and information systems (More information is available at http://www.OFM.WA.GOV/Roadmap). As a *Roadmap* business initiative, this Enterprise Grants, Contracts & Loans Management System will be an early adopter of three key *Roadmap* approaches:

- **Business process modeling**. Business process modeling is being conducted to document the "as-is" business processes and the "could-be" future model. The "could-be" model will serve as a starting point for the feasibility study and will represent a common understanding of the best practices to be implemented by the State. The "could-be" model will also identify key policy changes that may be necessary, key common information requirements, and establish the value proposition that can be achieved. The "could-be" models related to grants, contracts and loans management are recently available.

- **Integration architecture**. A common integration architecture for the State's financial and administrative systems is being developed under the authority of the state's Enterprise Architecture committee. This architecture will consist of principles, policies, reference models and standards. The integration architecture will be designed to address the following questions:

  – What is the technical architecture that will allow core financial and administrative systems and business processes to be implemented incrementally with confidence that all of the pieces will fit together as they come on-line?

  – What are the clear and consistent guidelines for central systems providers and line agencies that allow core financial and administrative systems to fit within the State's current environment of common and agency "shadow systems"?

  – How can financial and administrative systems be constructed to allow business process solutions to be composed of agency unique and central, common components?

This architecture will be under development at the time of the feasibility study. The feasibility study will take into account the integration architecture direction and requirements as known at that time.

Performance measurement. *Roadmap* business initiatives provide the opportunity to apply Government Management Accountability and Performance principles to the state's "back office" business processes. The performance indicators for grants, contracts and loans management will be available in early January 2006 as part of the business process modeling described above.

Key Business Drivers. In evaluating the feasibility of replacing sub-grant management systems, it is important for the agencies (CTED & ECY) and the State to identify the specific overall goals associated with such a change. These goals represent the key business drivers. The following is a summary of the key business drivers identified during this feasibility study:

- Aging Technology – CTED & ECY need to establish the technology architecture that is required to support current and future technology. The "enterprise" technology should be flexible, scalable and incorporate Internet architecture.

- Operational Efficiency and Effectiveness – Improve the efficiency and effectiveness of operations by eliminating the significant amount of paper-based processes, redundant data collection, reliance on stand-alone systems, and duplicative business functions between agencies.

- Potential Loss of Staff Expertise – Key individuals have vast amounts of expertise about undocumented processes, systems and "workarounds".

- Integration and Consistency of Processes, Systems, and Data – Create a single data repository that ensures that accurate information is efficiently routed to end-users to initiate action, approvals, and decisions.

- Improved Access to Information and Stronger Decision Support Capabilities – Enable accurate, accessible, and timely reporting to end-users at all levels of the organization.

This feasibility study will allow OFM, ECY and CTED to plan for an enterprise solution for grants, contracts and loans management (within the scope of this project) by documenting:

- The requirements for an enterprise grants, contracts and loans solution

- The business case for proceeding with such a solution

- The alternatives – and costs and benefits – for a solution and a recommended solution

And, for the recommended solution:

- A conceptual design

- A work plan

- A risk management plan

1.3. Approach

The team has expanded on the information gathered for the business case and emerging recommendation to produce this document. During the discussion of the emerging recommendation, the project Steering Committee provided direction that updated some of our planned approach.

- As described in the business case document, the options to custom build option and adapt PRISM were combined into one option.

- The estimated costs of the SAP option, combined with its risks (both described in the business case document), made that option not attractive to pursue further. The Committee requested the project concentrate on the Best-of-Breed option, as the recommended option.

- The custom build option can still be considered. However, that option has not been expanded in this document for two reasons:

    - By definition, a custom-built system will meet all requirements, so a detailed fit/gap analysis has not been done.

    - For the purposes of this study, the cost estimate for custom development in the business case document is adequate.

With those adjustments in mind, the team concentrated on the Best-of-Breed option and has:

- Documented the fit to requirements at the individual requirement level, for both functional and non-functional requirements.

- Updated the estimated costs onto DIS CBA spreadsheets.

- Investigated and analyzed CTED and ECY business programs for:

    - Current costs

    - Likely implementation sequence

    - Anticipated benefits over time

- Documented anticipated benefits in this document and in DIS CBA spreadsheet.

1.4. Sources

Sources for information in this document include:

CMS Software Requirements Specifications, CTED, June 2005: contracted study with seven appendices, summarizing findings on the requirements for a contract management system for CTED.
CMS Housing Trust Fund Storyboard, CTED, November 2005: contracted study with requirements for the Housing Division, including sample screen designs.
Contracts, Grants and Loans Project Preliminary Requirements Analysis, ECY June, 2005: contracted study with future process flows and high level requirements.
Roadmap publications on the website at: http://www.ofm.wa.gov/roadmap/default.htm.   Documents include Grant Management Value Proposition, version 0.6, February, 2006: a description of the "to be" processes for grants and loans and the potential value in harmonizing common business processes.
Washington State Enterprise Architecture Program Integration Architecture Initiative Charter, EA Committee Document version 1.3, December, 2005: Description of issues to be addressed by the statewide enterprise architecture initiative, a list of the Documenter Team, and initiative timeline.
Strategic Plan 2007 - 11, Office of the Interagency Committee for Outdoor Recreation (IAC), January, 2006: description of programs and outcomes the PRISM system supports.
Contracts Database User Guide Draft 2.3, L&I, January, 2006: draft of user manual for Contracts Database system used by L&I Contract Office staff.
Software Accessibility Requirements, June 2005: 5-page document developed by OFM Information Services staff.
WA State Office of Financial Management Grants, Contracts and Loans Feasibility Study Definition of Requirements, February 2006 (includes all interview notes)
Industry research conducted through National Grants Management Association (NGMA), www.ngma-grants.org The National Grants Partnership (NGP), www.thengp.org Grants.Gov, www.fedgrants.gov Forrester Research, Inc, www.forrester.com The Gartner Group, www.gartner.com Information Age Associates, www.iaa.com
Vendor research through SAP, Public Sector Solutions, www.sap.com Microsoft Inc., Government – Finance and public administration, Grant Management solutions (Navision) Agate Software, Inc, IntelliGrants software, www.agatesofware.com Northrop Grumman, InFlowSuite software, www.northropgruman.com
SAP Public Sector Implementations research including North Carolina Department of Transportation, BSIP, BWWI State of Arkansas Office of Budget, AASIS

State of Pennsylvania, IES: Imagine PA
Erie County New York
University of Kentucky, IRIS
Texas State University, FASTrack
Toronto City Council Audit Committee Report No. 1, Clause No. 9a, May 2003: review of the implementation of SAP financial and human resources/payroll information systems.
Office of the Controller of New York, CAS Redesign and FMS Integration Project, March 2002: Best practices and lessons learned from the assessment of comparable state financial management system implementations.
Berk & Associates Inventory and Evaluation of the State's Public Infrastructure Programs and Funds report dated December 16, 2005
JLARC Investing in the Environment: Environment Quality Grant & Loan Programs Performance Audit, Report 01-01 dated January 22, 2001

1.5. Relationship to Other Deliverables

The Alternatives Analysis and Recommendation document is made possible by work done in developing the Business Case and Preliminary Recommendation document. This document builds on the business case and, in turn, will be built upon in all subsequent documents:

- The Conceptual Design. To the level feasible, we will explore further the anticipated user experience for the recommended solution and will describe and illustrate the anticipated user interface and solution architecture.

- The Work Plan will lay out the steps likely to be needed to implement the recommended solution and the issues and our recommended approach to them.

- The Risk Plan will document the risks in implementing the selected solution in a risk management plan that includes the risk type, likelihood, impact and exposure as well as strategies for avoidance, mitigation and control.

2. SOLUTION ALTERNATIVE FIT ANALYSIS

As stated in the Business Case document, the work request for this feasibility study project asked that the study consider these alternatives:

- Acquiring and implementing a commercial off-the-shelf (COTS), best-of-breed system

- SAP grants management module (The Department of Personnel has acquired the SAP Human Resource System and the State has access to other modules within this enterprise package.)

- Adopting and adapting a grants management system in use by the Washington State Interagency Committee for Outdoor Recreation, known as PRISM.

- Building a custom application.

The work request also stated "Consideration of alternatives should also include the ease of integration of agency unique components with common components and transferring data to and from outside systems such as the statewide accounting system (i.e., Agency Financial Reporting System)."

As stated in the Business Case document, the team considered the above alternatives in light of:

- The functional and non-functional requirements as last documented.

- The logical component design of the solution described in the business case document.

- Knowledge of the alternatives themselves.

That consideration narrowed the above list to three alternatives:

1. **Building a custom application using design guidance from existing systems, including PRISM.**

2. **Implementing the SAP Enterprise Solution for Grants Management, consisting of both the mySAP CRM module and R3 Financials.**

3. **Acquiring and implementing a commercial off-the-shelf (COTS), best-of-breed system.**

The PRISM and custom build options were collapsed into one for these reasons:

- PRISM is built as a single-agency client server application. Its user interface and business logic are not separate. Although there are plans to re-engineer PRISM to a web-based architecture, this is not near complete.

- While PRISM is highly functional for its current users, it was specifically written for their needs and the needs of the sub-grants they manage. As such, its data and database are specific to certain sub-grant types. Its table maintenance and security features were designed to meet the needs of one agency only.

The enterprise solution to be recommended here must meet the non-functional and enterprise standards documented in the Definition of Requirements document. In order for PRISM to meet those standards, it would have to be re-written to a new architectural design, and include features for enterprise, multi-agency management. It would also have to accommodate the general needs of all sub-grants, not just the needs (both data and business logic) of one agency. In short, the features of PRISM would have to be changed to become more generic, more able to serve the data and format and business rules of many agencies.

It is our opinion that the effort to achieve these changes in PRISM would constitute a re-write of the current system and that such an effort would be consistent with the effort to custom build an application using design elements from PRISM as appropriate.

Descriptions of the three options follow.

## 2.1. Alternative Descriptions

2.1.1. Custom Solution

For this alternative, a team will develop an application following the enterprise system development standards of the State through the life cycle of the application. The PRISM system or other systems in use could be used as a guide for the design of the user interface.

This option will require detailing the requirements stated in the Definition of Requirements, designing data structures, user interface and architectural components, and actual implementation through coding and testing the application. It is very likely that the development team will locate and integrate "utility" components that have been developed to meet certain sets of functional requirements, such as workflow and document management. Rather than locate such utilities, this study has assumed development of all functionality to provide a baseline estimated cost to develop.

2.1.2. SAP Grants Management Solution

SAP's Public Sector Solution for Grants Management has been designed to address the administrative and financial requirements of sponsored program management. It is composed of two major business processes: Grants Management – Grantee and Grants Management - Grantor. The following diagram and description illustrate these processes as defined by SAP.

SAP Grants Management - Grantee

SAP Grants Management - Grantor
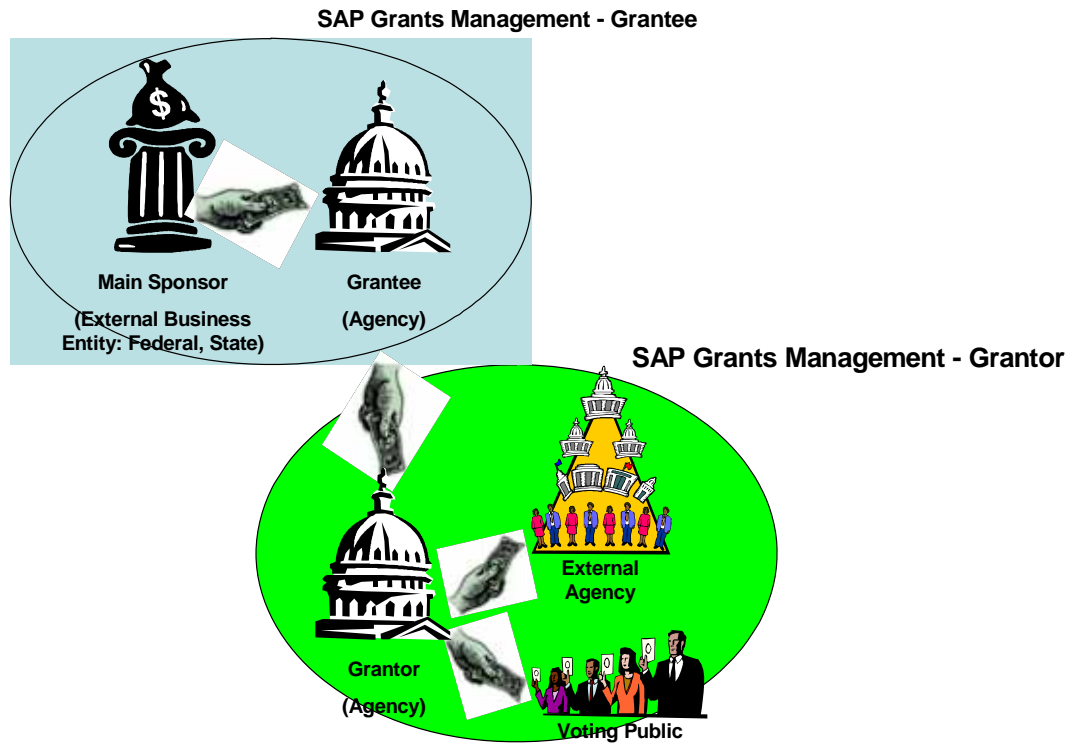
Grants Management – Grantee

According to the SAP Public Sector Solution Business Maps 2005, "SAP Grants Management – Grantee enables public sector institutions to meet individual sponsor requirements without compromising their internal accounting processes." Its focus is on financial administration throughout the grant life-cycle. Major sub-processes include: Preparing Grant Application (Pre-Award), Recording Sponsor's Decision, and Executing the Awarded Grant. This functionality is enabled through the use of the mySAP ERP 2005 Financials or SAP R/3 Enterprise product.

Grants Management – Grantor

According to the SAP Public Sector Solution Business Maps 2005, "SAP Grants Management – Grantor supports the design and execution of programs that provide financial assistance to individuals or organizations." Its focus is on providing Web-enabled grant applications and claims that can be manually assessed or automatically assessed through a configurable rules

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engine. The solution includes workflow authorization and notification in addition to correspondence and records management functions. The purpose of the Grantor Management solution is to meet the requirements of public sector organizations that fund grant programs. Major sub-processes include: Program Management, Planning and Budgeting, Application Assessment, Accounting.

This functionality is enabled through the use of the mySAP Customer Relationship Management (CRM) 5.0 and mySAP ERP 2005 (or SAP R/3 Enterprise). Budgeting and forecasting functions are achieved by means of integration with Funds Management (FM) and Controlling (CO) modules within the mySAP ERP Financials product.

The SAP ERP Financials product is made up of the following financial modules: Financial Module (FI), Controlling Module (CO), Funds Management Module (FM), Grants Management Module (GM) and Project Systems (PS).

- The Financials Module (FI) is composed of several sub-modules: General Ledger, Accounts Payable, Accounts Receivable, and Special Purpose Ledger.

- The Grants Management Module (GM) is designed to account for awards from government and other sponsors for a specific activity. It provides functionality to:
  - Plan, budget, identify, obtain, and record all funding related to received grants.
  - Plan, budget, identify, obtain, schedule, perform and record the tasks and activities related to managing the sponsored programs and furthering the sponsor's and organization's objectives.
  - Differentiate between eligible and ineligible costs.
  - Bill and record sponsor amounts.
  - Record and report all related costs, revenues, and required statistical information.

The Washington State Grant Management Business Process, which is out of scope for this study based on project scope as noted in Section 2.3 Constraints, corresponds to the SAP Grants Management – Grantee functionality which is contained primarily in the SAP ERP Financials application.

The Washington State Sub-Grant Management Business process, which is the primary focus for this study (again, based on project scope), corresponds to the SAP Grants Management – Grantor functionality which is primarily implemented through the SAP CRM application.

SAP's roll-out strategy for the SAP Grants Management solution initially focused on grantee organization requirements with a subsequent focus on grantor management solutions. The SAP Grants Management – Grantee solution was piloted by customers in July 2002 with Erie County, New York being the first North American implementation (go live was 2004). There are additional implementations of Grantee Management in the higher education business sector for

the US; however, insufficient information could be obtained on implementation of the SAP Grants Management – Grantor solution.

Based on a review of the business issues and requirements for a Washington State Enterprise Grants, Contracts, and Loans Management solution documented in this study, the State would need to implement mySAP CRM 5.0 and some portion of SAP ERP Financials.

The State currently runs a limited copy of version 4.7 of the ERP Financials product.   Upgrading to version 4.8 will assure access to the full functionality of the CRM module.

2.1.3. Commercial off-the-shelf (COTS), Best-of-Breed Solution

As noted in Gartner and Forrester research, many ERP customers are pursuing a strategy to acquire their own 'best of breed' solutions to business problems. This allows them flexibility to select components for financial management, human resources, purchasing, etc. from a variety of sources.

There are many vendors selling component solutions that could be used to satisfy the State's requirements for a Grants Management solution. These applications fall into several broad categories:

- Electronic Store Front systems

- Operational agreement management systems (sub-grants, contracts, loans)

- Integrated operational and financial management systems

- ERP solutions with integrated grants management functionality such as SAP, Oracle, AMS

Electronic Store Front systems provide an e-portal, data collection facility and not a complete Grants management system. They focus on collecting grant applications (and data) rather than an end-to-end grant management system. Once the data has been collected, it is then passed to other independent systems for processing. This is representative of the Northrop Grumman InFlowSuite application which is used for the Grants.gov web site.

Operational agreement management systems such as those espoused by e-procurement and e-sourcing vendors provide e-portal, workflow, document management, and business rules engines that could be used to satisfy many of the requirements and issues for a Washington State Grants Management Solution. Agate Software's IntelliGrants is an example of the type of system that offers scalability and extensibility.

Integrated operational and financial management systems include the Microsoft Government Finance and Public Administration solutions (Microsoft Dynamics) which are basically core financial systems that have had extensions added on to provide grant operational management capabilities.

The best-of-breed COTS solution was picked from vendors targeting solutions to the public sector for operations management functions as these segments were most representative of the State of Washington environment for this solution.

Factors that limited the selection of vendor products included:

- The deployment model of one centrally-administered application and database that serves multiple agencies.

- A web-based, services oriented architecture and SQL Server database.

- A stable company history as recognized by the major research services.

- An active client base that includes large government installations.

While AMS offers government financial solutions, it was not considered in this study for the following reasons:

- It is a Tier 1 ERP vendor and SAP was the chosen Tier 1 ERP vendor for consideration during this study

- It does not offer an "off the shelf" solution. It offers an application template that allows it to develop solutions that are customized to a government's specific needs.

The solution explored here is implementing a best-of-breed COTS operations management system for public sector use that will meet most or all of the GCL requirements, including the non-functional software and architecture requirements.

Because any acquisition of software will require a formal acquisition process, this document used a representative best-of-breed application to illustrate fit and estimate costs and benefits. A list of vendors included in this research will be provided to OFM.

2.2. Requirements/Solution Mapping

As explained in Section 1.3 – Approach of this report, the team expanded the requirements mapping in the Business Case document only for the Best-of-Breed alternative.

2.2.1. Custom Solution

The custom solution was not compared against functional or non-functional requirements because it is assumed that the custom application would be designed and built to meet all requirements.

2.2.2. SAP Grants Management Solution

Based on cost and risk information in the Business Case and Preliminary Recommendation, the Executive Steering Committee requested the project not pursue the SAP alternative further at this time.

2.2.3. Commercial off-the-shelf (COTS), Best-of-Breed Solution

Functionally, best-of-breed applications have a high degree of fit with the requirements at a use case level. Virtually all requirements for the operational support of sub-grant management are met directly out of the box or with some configurable settings. Interfaces to other systems are easily configurable.

The chart in Appendix B illustrates the fit of the COTS Best-of-Breed solution to the individual functional requirements.

2.3. Analysis of Functional Requirements/Best-of-Breed Solution Mapping

A review of the individual business requirements for the Grants, Contracts and Loans System indicate that a large number should be met directly out of the box, or with some setup/configuration. This should be expected since commercial off-the-shelf software is originally designed to meet the broadest set of business requirements that can be anticipated. There are, however, some customizations that have been identified, primarily in the areas of interfaces with other systems. A number of requirements were identified as potentially needing customization because until a specific package is selected it is unclear if the requirement is met or not.

When implementing a COTS package, as with custom development, it is important to recognize the value of Business Process Reengineering. BPR is the process of analyzing your business practices and processes and working to simplify them. Many business processes are shaped the way they are because of existing constraints, i.e., lack of automation or outdated automation. In order to get the most out of an investment in technology, these processes need to be re-engineered with the new environment in mind. Completing the BPR prior to setting up a new application will ensure you are taking maximum advantage of the automation technology at your disposal.

COTS software is often designed to allow variation in how business requirements are implemented across various client installations. This is accomplished by settings and configurations. Typically that includes making changes and additions to tables and reviewing screens for specific coded settings. As a result, there may be a large number of requirements that are designated as "2 – met with some configuration". Having a large number of requirements coded as "2" potentially signals a package that is both flexible and adaptable indicating a good fit for future requirements and changes. On the other hand, trying to put too many variations into

the COTS package may result in a significant burden of administration in order to set up and maintain those settings.

A potential downside of any particular COTS is that the design of the package may not follow the specific style or presentation that would be expected if constructing custom software. The software vendor has had to make design decisions that may not be easily modifiable. The actual design of the user interface (screens), the location of menus, navigation techniques, sequence of presentation and other things may be relatively fixed in a package. This standardization is preferable from an enterprise perspective but may appear as a limitation to an agency. As a result, it is always advisable to look at a COTS package in its entirety and determine where your preferences and desires, especially at the agency level, can be modified to accommodate the COTS package. These differences are not considered gaps in the context of this study.

There are a variety of business requirement that may not be met out of the box or with settings and configurations. Some of these are expected since there are always unique requirements at each installation. Others cannot be anticipated and will require customizations in order to implement. It is important to clarify the manner in which the vendor will make these changes and how they will keep them in sync with future releases, upgrades and enhancements.

Some requirements can be anticipated but not met because of each client's unique technical environment. If such requirements have been anticipated, the vendor should have reasonably flexible and easy methods to accommodate them. For example, the State will require the COTS package to interface with their existing financial system. This interface could be a real-time or batch interface. The COTS package should be able to accommodate the interface using an existing Application Programming Interface (API) or template import/export facility. Since interfaces can consume a significant portion of the implementation budget, this capability is very important.

The detailed analysis of all business requirements is found in Appendix B. Each functional requirement in the Definition of Requirements document was ranked using the scale in the following table. Since this analysis is based upon what could be expected with a COTS package, and not a specific package, many requirements have been given multiple fit ranks. That indicates that it will vary depending upon the package chosen. As a result, this analysis is representative fit/gap for a "generic" COTS package for agreement management.

Score	Description
1	Requirement met without customization—out-of-box functionality.
2	Requirement met without customization—configurable.
3	Requirement met with—automated work around.

4	Requirement met with—manual work around.
5	Requirement met with—application customization.
6	Requirement not met—no identified work around.

For the purposes of this analysis, a requirement is considered met if it is ranked a 1 or 2. Requirements that are partially met would be ranked 3, 4 or 5 in the case of needing to extend existing functionality. Requirements that are not met are ranked 6.

Out of a total of 323 requirements 80% to 90% can be expected to be met right out of the box or as settings and configurations that are addressable by an application administrator. Another 5%-10% may be accomplished with an automated or manual workaround. And only 5%-10% may require customization in order to implement. Below is a summary of the types of requirements that fall in each category.

2.3.1. Requirements Met

- Program setup, opportunity creation, publication
- Template library, boilerplate text, clause library
- Recipient self registration, user authentication
- Internet enabled, recipient research, online application
- Document creation, editing, validations, some business rules
- Workflow, assignments, notifications, alerts
- Versioning, amendments, revisions, attachments
- Assignment tracking, status, to do lists
- Reporting, fund tracking
- Online help, online manuals

2.3.2. Requirements Partially Met

- Specific workflow and calendar functionality beyond the base package
- Functionality and access to some systems tables, settings and controls
- Unique financial transactions
- A variety of specific business rules beyond the base functionality
- Email, fax, imaging, letter mail, GIS integration

- Creation of specific screens, queries, reports

2.3.3. Requirements Needing Customization

- Interfaces to AFRS, HR systems, other external systems

- Import/exporting data from other sources

- Single Sign-On, LDAP integration

- Electronic authentication

- Extending database, tables, functions for unique requirements

2.4. Non-Functional Requirements/Best-of-Breed Solution Mapping

Evaluating a COTS package for non-functional requirements does require a candidate software system in order to identify differentials. Since this analysis is speaking generally to the Best-of-Breed alternative, this section will simply provide commentary on elements that may exist in a particular package.

- **Operating Environment -** The majority of the COTS packages that the State would consider today would be designed with current technologies and run in a Microsoft environment. That includes Microsoft operating systems, SQL oriented databases, web-based presentation, XML technologies and so on.

- **External Interfaces** – Although a variety of techniques will exist to connect to external systems, most modern systems will use Application Programmable Interfaces (API) and XML to exchange data. This is a flexible technique that addresses most interfacing requirements.

- **Performance** - Determining the performance characteristics of an installed COTS package can be a difficult undertaking. Most systems are built to meet key performance metrics and many can be tuned to accomplish them. Unless there is a need to conduct a form performance test, most COTS package performance can be determined by site visits and interviews.

- **Maintainability and Support** - A key differentiator between COTS packages will be their ability to handle agency variations with the same instance of the application. This is essential to avoid future "silo" systems for different agencies. The ability of the COTS package to use standard architectures like Active Directory authentication and user management, Crystal Enterprise reporting, and cross-agency common workflow/routing will significantly reduce support costs.

- **Security** - Most packages will enforce user permissions and restrict access to data at the agency, individual, agreement type, and data type levels. This control should be able to be integrated with single sign-on authentication and/or standard OFM authentication methods.

- **Accessibility** - Each package has been developed previously based upon requirements and constraints prevailing at the time. The suitability of each package will need to be determined by a prioritization of accessibility features.

- **Statewide Enterprise Architecture** – A key element of the Statewide Enterprise Architecture has to do with integration with other state and non-state systems. The DIS Chief Architect estimates that 80% or more of the cost of integration can be attributed to the degree to which the application's user interface is separate from the rest of the application, especially the business rules and the API's. The application should have well documented and unrestricted API's that minimize the impact on a system of changes to its integration partners.

- **Implementation** - Careful consideration needs to be given to the appropriateness of each package from an implementation point of view. Initial implementation must lend itself to planned, progressive and compliant roll-out. Future releases should be backward compatible, and low-impact to deploy.

- **Conversion** – Particular attention should be given to data conversion capabilities of the COTS package. Some packages have API's available for conversion which minimizes the overall implementation effort by leveraging the data integrity logic within the system.

3. SOLUTION ALTERNATIVE COSTS – BY SOLUTION

As explained above in Approach, the team expanded the cost information in the Business Case document only for the Best-of-Breed alternative.

3.1. Custom Solution

Based on the requirements, an indicative function point count done on the requirements, and the assumptions listed in the Business Case document, the projected costs of developing a custom solution, using the design of existing systems as appropriate, are between $3.4 million and $4.5 million, plus training costs.

Five-year cost of ownership is estimated at $2.75 million to $3.9 million, plus hardware maintenance costs. Please see that document for more details of these estimates.

3.2. SAP Grants Management

Based on the requirements and the assumptions listed in the Business Case document, the projected costs of implementing an SAP solution are between $8.5 million and $13.1 million, plus license fees and training costs.

Five-year cost of ownership cannot be estimated without license fee information, but annual cost can be expected to be between 10% and 15% of implementation cost. Please see that document for more details of these estimates.

3.3. COTS/Best-Of-Breed

Based on the requirements and the assumptions listed in the Business Case document, the projected costs of implementing a Best-of-Breed solution are between $2.98 million and $3.54 million.

Five-year cost of ownership is estimated at $1.65 million to $2.5 million, plus hardware maintenance costs. These estimates are explained further in the Business Case document and below.

Based on the fit to requirements and assumptions below, the projected costs of implementing a COTS Best-of-Breed solution are listed below.

Best-of-Breed—Cost Estimates		
Component [Object]	*Low Range*	*High Range*
Vendor/Contractor Implementation Costs [CA, EL]	$1,900,000	$2,400,000
Implementation (OFM+Agencies' Cost) : Salaries [A]	$720,000#	$720,000#
Implementation (OFM+Agencies' Cost) : Benefits [B]	$240,000#	$240,000#
Hardware/Software [JC]	$120,000	$180,000
Training (OFM Cost) Salaries and benefits [A,B]	TBD (OFM)	TBD (OFM)
Capital Investment (rounded up to 10,000)	**$2,980,000 + TBD**	**$3,540,000 + TBD**
Annual Software Support (OFM Staffing Cost) [A,B]	$200,000#	$270,000#
Annual Hardware Maintenance [EE]	TBD (OFM)	TBD (OFM)
Annual Software Maintenance [EE]	$50,000	$80,000
Annual Vendor/Contractor Support [CA, EL]	$80,000	$150,000
Five Year Cost of Ownership (rounded up to 10,000)	**$1,650,000 + TBD**	**$2,500,000 + TBD**

Figure taken from Supplemental Budget Request 1/10/2006

Assumptions for the cost estimates for this solution include:

- *Vendor/Contractor Implementation Costs* includes application enterprise licensing and the services of the vendor/contractor implementation team. The vendor/contractor implementation team consists of Project Manager, Business Analysts, Technical Architect, Developers, Testers and Trainers. A blended rate of $125 per hour was used for resource estimating.

- For the low range an *implementation schedule* of 12 months was used; for the high range an implementation schedule of 18 months was used.

- *Implementation (OFM + Agencies' Cost)* includes project management, program management, agency business leads, subject matter experts, testers, data administration, network support and GIS developer as well as external quality assurance. Costs for these are taken from OFM's supplemental budget request dated 1/10/2006.

- *Hardware/Software* costs include 3 servers, Microsoft IIS Web Server, Microsoft SQL Server. These estimates do not reflect any discount the state may be able to take advantage of.

- *Annual software maintenance fee* is based on the license fee for the installed components.

- *Annual Vendor/Contractor Support* is an estimate of the amount of time that OFM may require from the vendor in support of enhancements and upgrades.

4. SOLUTION ALTERNATIVE BENEFITS – BY SOLUTION

4.1. Introduction

This section describes the various potential benefits CTED and ECY could realize as a result of implementing an enterprise Grants, Contracts and Loans Management (GCLM) solution. As explained in Section 1.3 – Approach of this document, the team expanded the benefits analysis in the Business Case document only for the Best-of-Breed alternative.

A new GCLM system will have both strategic and operational benefits. Strategic Benefits include new capabilities and improvements in the competitive position of the organization that may be realized as a result of the increased availability of information and data on the cost and quality of agency programs and services. Operational Benefits include the various tangible and intangible benefits resulting from business process improvements.

It is impossible to capture and value all of the benefits of a new system. The complexity of measurement, the lack of a generally accepted measurement method, and the diversity of organizational processes that prevent the collection of historical data are just a few of the reasons why.

It is likely that the benefits of a new GCLM system are significantly underestimated here in relation to costs, as many of the key benefits are qualitative and consequently cannot be included in this quantitative analysis.

Sierra Systems used several sources of information for quantifying and valuing potential benefits associated with the implementation of a new GCLM system for CTED and ECY. Listed in order of significance, they are:

- The participating agencies of this study – CTED, ECY, and OFM – through interviews with program, Fiscal and budget staff.

- Review of existing statewide grant management studies including: (1) Berk & Associates Inventory and Evaluation of the State's Public Infrastructure Programs and Funds report dated December 16, 2005; and (2) JLARC Investing in the Environment: Environment Quality Grant & Loan Programs Performance Audit, Report 01-01 dated January 22, 2001.

- Review of the Washington State Administrative Requirements for Ecology Grants and Loans, Publication No. 91-18, Revised March 2004.

- Review of most recent State Auditor Reports for CTED and ECY.

- Review of industry performance measurement studies for agreement management systems including e-procurement, e-sourcing, and contracts management.

- Our experience with contract negotiations and system implementations involving governments of similar size and budget.

- Other public sector associations including GFOA, NASPO, etc.

4.2. Key Assumptions.

In order to quantify future benefit estimates, it was necessary to make certain assumptions about the grants, contracts and loan management processes for each agency. The primary assumption concerning operational benefits was that the implementation of a GCLM solution would result in workforce productivity increases for both CTED and ECY. This assumption is reasonable based on the following operational benefits that can be expected to be realized with the new system:

- Reduced paper-based document handling and manual work flow through the automation of the sub-grant process from electronic advertisement and applicant response through project close-out, financial resolution and overall program outcome tracking.

- Reduced redundant data entry and manual processes allowing staff to spend less time on "transaction processing" and more time on "decision support" roles.

- Reduced impact of staff transitions on operational performance due to the use of forms, template and clause libraries, documented workflows, and automated business rules.

- Reduced data entry errors and time needed for corrections due to consistent data validation, editing and business rules.

These operational benefits would impact the current range of service level responses as documented by the OFM Roadmap team and contained in the Roadmap Grant Management Value Proposition:

Service Area	Range of Service Level Response
Percent of subgrant application proposals requiring follow-up and rework by program staff and/or recipient	• Responses ranged from two percent (2%) to ninety percent (90%). • For some competitive programs, applicants submitting incomplete documents lose the opportunity for funding consideration because non-compliant applications are discarded.
Elapsed time between receipt of applications and award of funds	• Ten working days to fourteen (14) months, or even longer for one program that requires Legislative approval for each project
Percent of subgrant payment requests requiring follow-up and rework by program staff and/or recipients	• Four percent (4%) to fifty percent (50%) • Reasons for payment rejection included missing signatures, math errors, date of service questions, cost eligibility questions, etc.

Service Area	Range of Service Level Response
Percent of progress reports requiring follow-up and rework by program staff and/or recipients	• Two percent (2%) to twenty-five percent (25%) • One program indicated that thirty percent (30%) of progress reports are not submitted on time and have to be requested from the recipient so payment requests can be processed.
Elapsed time between receipt of invoice and payment	• Two working days to two weeks to thirty days, or longer if questions cannot be resolved timely. • One program allows automatic monthly payments to eligible recipients without billing.

In addition, workforce reductions are not necessary to achieve workforce productivity gains. An economic benefit can be "realized" from the reallocation of staff hours from lower to higher value tasks. The Berk & Associates study provided several examples of agency issues and opportunities which could be helped by workforce productivity gains from the implementation of the GCLM solution. Several examples are provided in the following table.

Agency / Department / Office	Program	Issue/Opportunity
CTED – Economic Development Division, CERB	Job Development Fund	Beginning with the 2007-09 biennium, $50,000,000 in grants will be managed by CERB staff via a competitive process now being developed.
CTED – Local Government Division, PWB	Public Works Trust Fund Construction Loan Program	Higher demand on Board resources due to declining federal resources, coupled with increasing regulations. Transition in Board members. Transition in staff.
CTED – Local Government Division	CDBG Imminent Threat Grant	The biggest challenge is delivering a fast enough turn-around on grant applications.
DOE - Shorelands and Environmental Assistance	Flood Control Assistance Account Program	Reduced funding from other sources has put more of a burden on FCAAP to cover administrative costs.
DOE – Water Resources Program	Referendum 38 – Water Supply Facilities	This biennium (2005-07) is the first time there is a formal competitive application.

4.3. Methodology

There is uncertainty in predicting future benefits. As such, Sierra Systems used a standard method employing several "reasonableness" checks for estimating benefits from potential workforce productivity gains.

Step 1. The first step was to determine the current effort expended in GCLM processes by each agency. GCLM processes included FIND, AWARD, POST-AWARD, CLOSE-OUT, and REPORTING. Estimates were developed through interviews with agency program, Fiscal and budget staff. There is uncertainty in the accuracy of these estimates based on uncaptured or incomplete operational performance metrics such as staff hours expended for GCLM processes, number of applicants, number of applications received, number of awards, etc.

As a reasonableness check, the estimates for current GCLM work effort were compared to the total agency FTE count for each agency. The estimates for direct effort in the current GCLM processes and the relative percent of that effort to total agency FTEs are shown in the following tables. Agency personnel have reviewed these numbers and believe they are reasonable.

CTED	
Total Agency FTE's	355
Estimated current GCLM process effort (FTE's)	50
Current GCLM Process effort as a Percentage of Total Agency FTE's	14.1%

ECY	
Total Agency FTE's	1483.7
Estimated current GCLM process effort (FTE's)	178
Current GCLM Process effort as a Percentage of Total Agency FTE's	12.0%

Step 2. The next step was to assign a percentage gain in workforce productivity to each agency. Environmental conditions may impact the realization, timing and magnitude of workforce productivity gains. These include: current sophistication of agency technology and processes; agency capabilities for training and user support; change management; organizational management; and legislative mandates (introduction of new programs). As noted in the OFM Roadmap Grant Management Value Proposition, the biggest drivers for subgrant management process variations among agencies were:

- The extent and complexity of program-specific rules and regulations imposed by grant funders

- The level of investment the agency or program has made in process improvement, applicant and recipient training, and technology tools to support the process.

Based on information provided by the agencies, different workforce productivity gain factors were established for CTED and ECY. Higher gain factors were established for CTED than ECY due to CTED's relative lower investment in technology tools and process improvements.

Based on uncertainty in the work effort estimates, a conservative approach was taken to establishing estimates for workforce productivity gain factors. This is consistent with other industry studies for clients implementing systems to address non-automated processes. The factors presented in the following tables have been reviewed by agency personnel. Based on their knowledge of the current GCLM processes, the agencies believe these potential workforce productivity gains are reasonable.

CTED Workforce Productivity Gains	Factor
Within first 3 months after implementation	0.0%
3 to 6 months after implementation	2.0%
6 to 9 months after implementation	4.0%
9 to 12 months after implementation	8.0%
1 to 7 years after implementation	8.0%

ECY Workforce Productivity Gains	Factor
Within first 3 months after implementation	0.0%
3 to 6 months after implementation	1.0%
6 to 9 months after implementation	2.0%
9 to 12 months after implementation	4.0%
1 to 7 years after implementation	4.0%

A refinement of this process would be to establish workforce effort estimates and productivity gain percentages for each GCLM sub-process – Find, Award, Post-Award, Close-Out, and Reporting. This has not been pursued based on the inadequacy of currently available performance data for each agency.

Step 3. The next step was to apply the workforce productivity gain factors to the current GCLM effort estimates to quantify the amount of time savings each agency could be expected to realize. These computations can be found in Appendix D for CTED and Appendix E for ECY.

An important assumption on the realization of savings from workforce productivity improvements is that they will be realized gradually over the first one to two years allowing the agencies to deal with ramp-up, change management and learning curve issues.

Step 4. To value future benefit estimates related to workforce productivity gains, Sierra Systems obtained the following agency aggregate personnel cost data:

- CTED aggregate personnel costs: Annual Salary $60,000, Benefits $16,800 (28% of Salary), and Indirect costs of 38.6% of salaries plus benefits.

- ECY aggregate personnel costs (based on information provided in Fiscal Notes): Annual Salary $60,000, Benefits $15,000, and Indirect costs of 39.6% of salaries plus benefits.

The valuation of workforce productivity gains can be found in Appendix D for CTED and Appendix E for ECY. This information has been transferred to Form 5 of the DIS CBA spreadsheets.

As a reasonableness check on these computations, a second method for estimating workforce productivity gains was used. This second method was based on the number of "users" of the new GCLM system. Two categories of users were established:

- Intense users who would be using the system on a near daily basis such as data entry personnel.

- Casual users who would be using the system on an infrequent basis to review information or generate reports.

Anticipated system user information provided by the agencies included:

CTED	
# of Intense Users	50
# of Casual Users	150

ECY	
# of Intense Users	165
# of Casual Users	200

Two scenarios were established for the potential workforce productivity gains to be realized by each user category:

- Conservative. In the conservative scenario it was assumed that "intense" users will achieve a 3% gain in productivity and that "casual" users will achieve a 1% gain in productivity.

- Moderate. In the moderate scenario, it was assumed that intense users will achieve a 5% and casual users a 2% gain in productivity.

Benefit calculations from the second method for the conservative scenario were consistent with those generated from the primary method. Based on the uncertainty in the data provided by the agencies, "consistent" was defined as being within plus or minus twenty-five percent.

4.4. Summary

Break-even Point. As shown in Form 1 of the DIS CBA spreadsheet, the project reaches its breakeven point during year ten or ten years after the final implementation using the conservative approach. Based on variations in the realization of benefits, the breakeven point could be realized sooner for the agencies; this conservative valuation of benefits does not take into account the intangible strategic benefits from the GCLM solution.

Limitations of the Analysis. The cost/benefit analysis in this report should be considered a contributing element to the Agencies' decision-making process, but not the principal driver. There are several strategic benefits of a new GCLM system for the agencies and the State, and they along with costs, should be the major factors considered in the analysis.

Strategic Benefits. Key strategic benefits the agencies and the State can expect to achieve from an enterprise GCLM solution implementation include:

- Information flow and workflow:
  - Provide the ability to maintain and access a greater amount of timely and accurate data which will support improved decision-making by agency staff as well as providing enterprise wide data that is critical for executive planning.
  - Improve monitoring and management of projects using scheduled events and notice triggers to alert staff to required activities which reduces errors and audit and compliance issues.
  - Integrate with existing business procedures allowing automated workflow processes to interact with manual procedures.
  - Provide auditing and tracking for documents and versions of documents.
- Web-enablement & e-Government:
  - Enhance the ability to support and implement web-based initiatives and improve customer service to both internal and external stakeholders through new service delivery models.
  - Simplify public access to grant information and applications which improves participation and reduces administrative support.

- Standardization:

    – Facilitate process improvement opportunities and standardization.

    – Provide the ability to standardize processes across program areas and agencies which will improve productivity and enterprise reporting.

- System Integration:

    – Ability to integrate to internal and external systems using standard communication protocols.

    – Technology Infrastructure for the future and scalability.

    – A COTS application with on-going vendor support will reduce the risk associated with customized, legacy systems.

As noted in the Berk & Associates study (see Section 1.4 Sources of Information), a well-managed organization or system should be founded on a strategic management framework that integrates and prioritizes three requirements: (1) clear strategic framework and policy direction; (2) robust management systems and processes; and (3) aligned organizational structures. Management system and process recommendations from this study included:

- Invest in Financial Management Systems that increase efficiency and reduce duplicated efforts.

- Invest in modern enterprise information systems to support integrated program decision-making and reporting.

- Use information technology to create a single portal of electronic entry into the State's system for improved information processing, collection and reporting.

Meeting the Berk study recommendations will require enabling policy and organizational initiatives. The extent to which such policies and initiatives are carried out will impact and could reduce the potential benefits from the implementation of a new sub-grants management system.

Additional potential strategic and operational benefits by solution alternative are shown in the following sections. While some of these benefits may be difficult to quantify in monetary value, they can have significant impact on agency business processes and operations, and improve the efficiency and effectiveness of agency programs and services.

4.4.1. Custom Solution

Developing a custom solution using design guidance from existing systems has these potential benefits:

- The solution will be specifically designed to meet the State's Enterprise Architecture standards.

- The solution will be specifically designed and coded to meet the State's core requirements and accommodate the agency-specific requirements.

- The State may control the staffing decisions for a custom development, choosing to contract and/or staff from State agencies.

- The State may control the specific enhancements made to the system through its own change control process.

4.4.2. SAP Grants Management

Implementing an SAP solution promises these benefits:

- Encourages use of SAP-defined best practices.

- Meets the state's functional requirements through implementation of two fully supported SAP components.

- A package implementation, rather than custom development, will reduce the occurrence of specific customizations and encourage more uniform processes and data across agencies and programs.

- The two SAP components needed for this solution can be expected to work seamlessly with each other.

- The State will receive more value sooner for its investment in SAP licenses.

- SAP identity store is closest to the overall global identity store the State uses. SAP is synchronized with Active Directory.

4.4.3. COTS/Best-Of-Breed

Implementing a best-of-breed COTS solution is a viable option for the state for a number of reasons. These benefits can be expected:

- Written specifically for public sector environment mapping more directly to public sector business processes which minimizes integration and training costs.

- Meets the state's requirements in a robust fashion and within the time constraints.

- Will implement more functionality sooner than a custom developed application or ERP solution.

- Faster implementation will allow implementation of more program types than a custom developed application or ERP solution.

- Incremental implementation of agencies and programs begin earlier in the project.

- Requires less ongoing agency support than custom development or ERP solution.

- Provides an ongoing upgrade path with additional features and functionality.

- A package implementation, rather than custom development, will reduce the occurrence of specific customizations and encourage more uniform processes and data across agencies and programs.

- Simplifies interfaces with other systems using XML technologies to manage the importing, exporting and real-time communications.

- Requires the least amount of module/component integration.

- Uses Windows and Intel based commodity platforms that reduce the cost of facilities and infrastructure.

- Lower risk elements produce estimates that are more accurate than custom development or ERP solution.

5. SOLUTION ALTERNATIVE RISKS – BY SOLUTION

Risks for all and each alternative were listed in the business case document and are updated here.

5.1. Risks Common to All Alternatives

Certain risks will be present no matter which alternative is chosen. These include:

- Lack of agency participation and support will put the project at risk.

- The Roadmap initiative is in progress. An enterprise financial system is anticipated but not yet implemented. If the solution cannot interface effectively and with reasonable cost with the enterprise system chosen, the business needs will not be met.

- The effort to implement statewide enterprise financials is very large, very complex and is being carefully planned through the Roadmap project. Progress and risks of that project may also pose risks for this project.

- The State's Enterprise Architecture is still emerging. This study documents the current state of the recommendation, which is not yet complete. Changes to the Enterprise Architecture may present risks for the solution chosen.

- As an early Roadmap project intended to serve the state enterprise and not just one agency, the project to implement this system will be more complex than single-agency projects in at least these ways:

  - Determining requirements and their priorities will be more time-consuming to involve more stakeholders.

  - Making sure the application meets the essential priority requirements will be more time-consuming to involve more stakeholders in coordination and testing.

  - The effort to implement the system will be increased by the number of people affected in each agency.

- The data involved in managing sub-grants and loans vary widely based on the funding source of the agreement, the type of program, the specific program, and other factors; there is significant risk that the solution will not be able to meet the data needs of all programs. To the extent the solution system is able to accommodate these wide differences and still provide useful functionality for agency users, this risk will be mitigated.

- The current Contracts and Grants Program at ECY is old and unsupported. There is a risk that it may fail and require replacement before the solution can be implemented.

- There are many desktop databases and spreadsheets now in use to help manage agreements. The solution must provide enough functionality to replace at least some of these "shadow" systems or run the risk of adding yet another application to which users must "feed" data.

- This is the first time a team has been formed to implement a Roadmap system. The team will need time to build its processes and strong leadership.

5.2. Custom Solution

Risks specific to the custom solution include:

- A custom developed application can become static and unusable because of budget pressures. The current CGP application at Ecology has experienced this.

- This alternative places the most schedule and performance risk on the State.

- There is a risk of spending resources to develop functionality that is more economically obtained by purchasing a packaged component. Avoiding this risk will require spending time researching functional component packages, creating a schedule risk.

- There will be more of a tendency to change a custom-developed application than a package solution.

- The estimating margin of error is highest with this option at +/- 50%

- Delays in the development schedule will reduce the degree of deployment, i.e., programs, agencies.

5.3. SAP Grants Management

Risks specific to the SAP solution include:

- The State's future plans to implement statewide enterprise financials may require reconfiguration of SAP financials functionality implemented as part of grants management.

- SAP CRM was developed for private sector sales organizations, (help references still refer to private entity sales and marketing,) which increases the risk of customizations to accommodate the public sector.

- SAP operates on its own proprietary platform; adoption of new technologies will be dictated by SAP, not by business or technical need.

- Research produced no information regarding a public sector SAP sub-grant management implementation.

- Program interfaces for SAP must be accomplished through adapter strategy applications, which require maintenance and initial cost, and are exceptional to the statewide enterprise architecture; with the anticipated high number of agreement-specific data requirements, this will be a large factor.

- SAP applications are designed based on specific functional and user interaction models and the state will have to accept that design.

- The State may not be able to maintain qualified staff resources to support the application.

- The SAP licensing formula is complex, requiring OFM staff to manage licenses and coordinate the acquisition of site licenses for agencies.

- The State will be required to implement all upgrades as a condition for SAP's continuing to provide support for the system.

- SAP charges upgrade license fees in addition to annual maintenance fees. The State will be obliged to pay these fees as upgrades are released, every 18 months.

- The State will incur license fees for both components regardless of how much of the components' functionality it is actually using.

- The State will pay maintenance fees based on the total licenses, whether the licenses are being used or not.

- Because there are different categories of SAP licenses, there is a risk of over- or under-paying for licenses actually being used.

5.4. COTS/Best-Of-Breed

The following list assumes selection of a product that meets functional and non-functional requirements. Risks specific to such a Best-of-Breed solution include:

- Some COTS applications are designed to handle all operational and financial management; it may be challenging to disentangle functionality for ERP integration.

- COTS applications are designed based on specific functional and user interaction models and the state will have to accept that design.

- The State's procurement process may not result in the selection of the most appropriate product.

- Flexibility in the system may allow agencies to use non-standard processes.

6. RECOMMENDED SOLUTION ALTERNATIVE

6.1. Roadmap Solution Matrix

The matrix below, reproduced from the Business Case document, indicates the relative feasibility of avoiding application change until statewide financials are in place, installing a temporary solution, or implementing a solution for the enterprise in the short term.

For this business solution, there is a need to act in the short term to replace an aging system (ECY) and automate a cumbersome manual system (CTED). There is no business or financial advantage in implementing a temporary solution, since there is a viable solution that can serve the enterprise in the short term.

Solution	Wait for Statewide Financials	Temporary Solution	Enterprise Solution
1. Custom solution with PRISM design	•Aging and audit- non-compliant ECY system must be replaced before statewide financials •Short term CTED business need	No advantage to temporary solution: product should be compatible with enterprise solution	Possible within solution constraints; there is a better solution
2. SAP Enterprise Solution for Grants Management	•Aging and audit- non-compliant ECY system must be replaced before statewide financials • Short term CTED business need	N/A	Not possible to implement within solution constraints
3. Best of Breed COTS Solution	•Aging and audit- non-compliant ECY system must be replaced before statewide financials •Short term CTED business need	No advantage to temporary solution: product should be compatible with enterprise solution	Possible within solution constraints; recommended solution
Costs		N/A	See above

6.2. Recommendation

Based on a review of the business issues, the functional and non-functional requirements, project constraints, and cost benefit analysis, Sierra Systems recommends implementing a COTS/Best-of-Breed solution. Subject to the State's changing the requirements or project constraints, the team believes this alternative carries the most benefit with the least risk. The chart below, also presented in the Business Case document, summarizes the team's findings.

Criteria	Custom	SAP	COTS
Functional	- Built to fit - Configurable settings and data require greater development time	- High degree of fit - Greater degree of configuration	- Highest degree of fit - Least reliance on configuration
Non-Functional	- Built to fit	Requires adapter strategy	- Simpler interfacing
Licensing/Fees	- none	- Enterprise (per seat) licensing - Requires MySAP CRM	- Enterprise licensing (one price for state-wide use)
Project Staffing (agency)	- Greater staffing for requirements and testing and implementation	- Larger staffing requirement - Higher priced resources	- Least staffing requirement
Project Schedule	- Meeting schedule constraints will compromise functionality	- Longest implementation	- Meets schedule constraint
Project Costs	- Greatest risk of estimates	- Greatest project cost	- Meets cost constraint
Hardware/Software	- Built to standard configuration	- Uses Oracle database	- Use Wintel, Microsoft platform
Ongoing Staffing (agency)	- Developers	- Multiple specialists	- Administrator
Ongoing Costs	- Developer support	- Annual maintenance - Upgrade support	- Annual maintenance
Risks	- Schedule risk	- Greatest risk of failure	- Potential for having to un-bundle functionality
Pros	- Matches requirements	- ERP adherence	- End user robustness - Fastest implementation - Extensible
Cons	- Greatest development risk	- Time to implement - Ongoing support staffing - Must accept package	- Ability to influence future functionality - Must accept package design, i.e., UI, processes

		design, i.e., UI, processes - Cost	

6.3. Further Recommendation

In addition to the solution recommendation, the team also recommends:

- In business cases for software acquisition, clearly identify and justify the type of users planned.

- In business cases for software acquisition, evaluate and favor the ability of a COTS package to serve State business needs other than sub-grants, contracts and loans.

- Activities before a COTS implementation:

  a. Select and update the sequence of program implementation.

  b. Install the application and step through and update the system requirements as met by the application. Pay special attention to:

     i. Privacy and access requirements, as system reconfiguration after implementation could be costly.

     ii. Operational and management reporting requirements.

  c. Install the application and seed data for program staff to become familiar with.

  d. Working with CTED, ECY and OFM, develop high level workflows and documents that meet enterprise requirements.

  e. Customize the high level workflows and documents for each agency program.

- Develop a governance model which addresses State-wide requirements:

  f. Implement a process and resources to ensure that appropriate COTS enhancements/extensions are implemented.

  g. Evaluate each purchased but unused module by appropriate staff.

- Negotiate agreements "so that payments for the software license acquisition component are made on an as needed or the most cost effective basis".

- Negotiate agreements such "that software maintenance payments are based on the number of software licenses in use and not on the number of licenses acquired".

Appendix A. Revision Log

Date	Description	Author
March 7, 2006	Draft submitted for review	Tom Babington / Gary Hudson / Carol Baque
March 10-15, 2006	Revised after User Group review: *p. 16:* change title of section 2.3.3 *pp.25-25*: change section 4 to clarify and update benefit numbers	Tom Babington / Carol Baque

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Appendix B. Detailed Requirements Fit/Gap for Best-of-Breed

A functional requirements fit/gap chart for the COTS Best-of-Breed solution is attached as a separate document.

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Appendix C. Selected Public Infrastructure Program Inventory

A chart with selected program inventory information extracted from the Berk & Associates Study (see section 1.4 Sources) is attached as a separate document.

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Appendix D. CTED Benefit Calculation Worksheets

A chart (Excel Workbook with multiple tabs) with CTED benefit calculations is attached as a separate document.

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Appendix E. ECY Benefit Calculation Worksheets

A chart (Excel Workbook with multiple tabs) with ECY benefit calculations is attached as a separate document.

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Appendix F. Cost Benefit Worksheets

A chart (Excel Workbook with multiple tabs) with the cost benefit information required for a feasibility study is attached as a separate document.